

Amendments To The Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A tearable thermoplastic resin film ~~having~~ said film formed as a single integral sheet over its entire area, said film comprising:

a plurality of substantially parallel spaced apart linear scratches formed on one side surface of the film, wherein said scratches extend the entire longitudinal length of the film and are evenly spaced apart from each other over the entire transverse width of the film, ~~wherein said linear scratches enable tearing the film substantially straight from any point along any of said plurality of linear scratches~~ said longitudinal length being greater than said transverse width,
wherein said linear scratches have a depth of 1 to 40% of the thickness of said film and are evenly spaced apart 10-200 μ m along said transverse width so as to facilitate easy tearing along said longitudinal length from any point of said plurality of scratches.

Claim 2. (Cancelled)

3. (Previously Presented) The tearable thermoplastic resin film according to claim 1, wherein the depth of said linear scratches is 0.1 to 10 μm .

4. (Previously Presented) The tearable thermoplastic resin film according to claim 1, wherein the width of said linear scratches is 0.1 to 10 μm .

5. (Cancelled)

6. (Previously Presented) The tearable thermoplastic resin film according to claim 1, further having a plurality of uniformly located fine penetrating and/or non-penetrating pores.

Claim 7. (Cancelled)

8. (Currently Amended) The tearable thermoplastic resin film according to ~~claim 7~~ claim 1, wherein said sheet is a laminate film comprises at least one film layer having said linear scratches, and a sealant film layer fixed to the film layer over its entire area.

Claims 9-10. (Cancelled)

11. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim

64, wherein said fine particles have a Mohs' hardness of 5 or more.

12. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 11, wherein said fine particles are fine diamond particles.

13. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64, wherein said pressing is by a film-pressing means comprising an air-blowing means.

14. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 13, wherein the pressure of an airflow blown onto said film is 0.05 to 5 kgf/cm².

15. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 13, wherein air is blown from a blower or a nozzle.

16. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64, wherein said pressing is by a film-pressing means comprising a brush brought into sliding contact with said film.

17. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 16, wherein said brush have hairs having a recovery-from-bending ratio of 70% or more, a diameter of 0.1 to 1.8 mm and a length of 1 to 8 cm, and a density of 100 to 500/cm² on the brush-sliding surface.

18. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 16, wherein said brush is in sliding contact with said film at a pressure of 0.01 to 5 kg/cm² on said brush-sliding surface.

19. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64, wherein said roll has an outer diameter of 2 to 20 cm.

20. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64, wherein a tension of 0.01 to 5 kgf/cm width is applied to said film in sliding contact with said roll or plate.

21. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64, wherein the moving speed of said film is 10 to 500 m/minute.

22. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64, wherein linear scratches are formed in the moving direction of said film with the position of said roll or plate being fixed in the width direction of said film.

23. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 22, wherein the rotation axis of said roll is parallel with the width direction of said film, and wherein said roll has a lower peripheral speed than the moving speed of said film and an opposite rotation direction to the moving direction of said film.

24. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 23, wherein the peripheral speed of said roll is 1 to 50 m/minute.

25. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64,

wherein an endless pattern belt comprising small rolls or plates having a large number of hard fine particles on the surfaces in parallel, which is longer than the width of the film, is arranged in the width direction of said film,

such that each small roll or plate can be in sliding contact with said film; and

wherein said endless pattern belt is rotated to continuously bring said small rolls or plates into sliding contact with said film,

whereby said linear scratches are formed on said film slantingly to its moving direction.

26. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 25,

wherein said pressing is by a film-pressing means comprising an endless brush comprising a large number of hairs on an endless belt, which is longer than the width of the film;

wherein said endless brush is disposed in parallel with said endless pattern belt via said film; and

wherein said endless brush is rotated to continuously bring said hairs into sliding contact with said film, such that the direction of said hairs slidably moving on said film is opposite to the direction of said small rolls or plates slidably moving on said film.

27. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64,

wherein at least two rolls or plates each having an axial direction in the width direction of said film are arranged in parallel in the moving direction of said film;

wherein vertically movable guide means for independently moving said rolls or plates in the width direction of said film is provided;

wherein each roll or plate is slidably movable on said film from one end to the other;

wherein said rolls or plates are repeatedly subjected to a cycle of moving away from said film after reaching the other end and returning to the original position; and

wherein the movement of said rolls or plates is controlled such that at least any one of rolls or plates is always in sliding contact with said film over its entire width,

whereby said linear scratches are formed on said film slantingly to its moving direction.

28. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 27, wherein said rolls are rotated at a lower peripheral speed

than the moving speed of said film in an opposite direction to the moving direction of said film.

29. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64,

wherein at least two roll trains each comprising small rolls having a large number of fine hard particles on the surface, which are mounted to supports in parallel, are arranged in the width direction of said film, said roll trains independently moving along vertically movable guide means in the width direction of said film;

wherein each roll train slidably moves on said film from one end to the other, and is repeatedly subjected to a cycle of moving away from said film after reaching the other end and returning to the original position, during which the movement of said roll trains is controlled such that at least any one of said roll trains is always in sliding contact with said film over its entire width,

whereby said linear scratches are formed on said film slantingly to its moving direction.

30. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 29, wherein the axial direction of each small roll in said

roll trains is substantially in alignment with the longitudinal direction of said film.

31. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64,

wherein an endless pattern belt comprising small rolls or plates having a large number of fine hard particles on the surfaces in parallel, which are longer than the width of the film, is arranged slantingly to its moving direction such that each small roll or plate can be in sliding contact with said film on said film; and

wherein said endless pattern belt is rotated in an upstream direction of said film to continuously bring said small rolls or plates into sliding contact with said film,

whereby said linear scratches are formed on said film substantially in its width direction.

32. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 31,

wherein said film-pressing means is an endless brush comprising a large number of hairs on an endless belt, which is longer than the width of the film;

wherein said endless brush is arranged in parallel with said endless pattern belt via said film; and

wherein said endless brush is rotated such that the direction of said hairs slidably moving on said film is opposite to the direction of said small rolls or plates slidably moving on said film, thereby continuously bringing said hairs into sliding contact with said film.

33. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64,

wherein at least two rolls each having an axial direction slanting to the moving direction of said film and vertically movable guide means for independently moving said rolls are arranged;

wherein each roll slidably moves on said film from one end to the other, and is repeatedly subjected to a cycle of moving away from said film after reaching the other end and returning to the original position, during which the movement of said rolls is controlled such that at least any one of said rolls is always in sliding contact with said film over its entire width,

whereby said linear scratches are formed on said film substantially in its width direction.

34. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim

33, wherein each roll is rotated at a lower peripheral speed than the moving speed of said film in an opposite direction to the moving direction of said film.

35. (Withdrawn) The method for producing an easy-to-straight-tear thermoplastic resin film according to claim 64,

wherein at least two roll trains each comprising small rolls having a large number of fine hard particles on the surfaces, which are mounted to supports in parallel, are arranged on said film slantingly to its moving direction;

wherein vertically movable guide means for independently moving said roll trains in the width direction of said film are-arranged;

wherein each roll train slidably moves on said film from one end to the other, and is repeatedly subjected to a cycle of moving away from said film after reaching the other end and returning to the original position, during which the movement of said roll trains is controlled such that at least any one of said roll trains is always in sliding contact with said film over its entire width,

whereby said linear scratches are formed on said film substantially in its width direction.

Claims 36-37. (Cancelled)

38. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, wherein said fine particles have a Mohs' hardness of 5 or more.

39. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 38, wherein said fine particles are fine diamond particles.

40. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, wherein said film-pressing means is an air-blowing means.

41. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 40, wherein the pressure of an airflow blown onto said film is 0.05 to 5 kgf/cm².

42. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 40, wherein said air-blowing means is a blower or a nozzle.

43. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to

claim 65, wherein said film-pressing means is a brush brought into sliding contact with said film.

44. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 43, wherein said brush has hairs having a recovery-from-bending ratio of 70% or more, a diameter of 0.1 to 1.8 mm and a length of 1 to 8 cm, and a density of 100 to 5 kg/cm² on the brush-sliding surface.

45. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 43 , wherein said brush is in sliding contact with said film at a pressure of 0.01 to 5 kg/cm² on said brush-sliding surface.

46. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, wherein said roll has an outer diameter of 2 to 20 cm.

47. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, comprising a means for applying a tension of 0.01 to 5 kgf/cm width to said film in sliding contact with said linear-scratch-forming means.

48. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, comprising means to move the film at 10 to 500 m/minute.

49. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, means to form linear scratches in the moving direction of said film with the position of said rolls or plates fixed in the width direction of the film.

50. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 49,

wherein the rotation axis of said roll is parallel with the width direction of said film; and

wherein said roll is rotated at a lower peripheral speed than the moving speed of the film in an opposite direction to the moving direction of the film.

51. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 50, wherein the peripheral speed of said roll is 1 to 50 m/minute.

52. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, comprising

an endless pattern belt comprising small rolls or plates having a large number of fine hard particles on the surfaces in parallel, which are longer than the width of the film;

wherein each small roll or plate is arranged in the width direction of said film such that it is in sliding contact with said film; and

wherein said endless pattern belt is rotated so that said small rolls or plates are continuously brought into sliding contact with said film,

whereby said linear scratches are formed on said film slantingly to its moving direction.

53. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 52,

wherein said film-pressing means is an endless brush comprising a large number of hairs on an endless belt, which is longer than the width of the film;

wherein said endless brush is arranged in parallel with said endless pattern belt via said film; and

wherein said endless brush is rotated such that the direction of said hairs slidably moving on said film is opposite to the direction of said small rolls or plates slidably moving on said film,

whereby said hairs are continuously in sliding contact with said film.

54. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65,

comprising at least two rolls or plates each having an axial direction in the width direction of said film, which are arranged in parallel with the moving direction of said film; and

vertically movable guide means for independently moving said rolls or plates in the width direction of said film;

wherein each roll or plate slidably moves on said film from one end to the other, and is repeatedly subjected to a cycle of moving away from said film after reaching the other end and returning to the original position, during which the movement of said rolls or plates is controlled such that at least any one of rolls or plates is always in sliding contact with said film over its entire width,

whereby said linear scratches are formed on said film slantingly to its moving direction.

55. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 54, wherein said rolls are rotated at a lower peripheral speed than the moving speed of said film in an opposite direction to the moving direction of said film.

56. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, comprising

at least two roll trains in the width direction of said film, each of which comprises small rolls having a large number of fine hard particles on the surfaces and mounted to supports in parallel; and

vertically movable guide means for independently moving said roll trains in the width direction of said film;

wherein each roll train slidably moves on said film from one end to the other, and is repeatedly subjected to a cycle of moving away from said film after reaching the other end and returning to the original position, during which the movement of said roll train is controlled such that at least any one of said roll trains is always in sliding contact with said film over its entire width,

whereby said linear scratches are formed on said film slantingly to its moving direction.

57. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 56, wherein the axial direction of each small roll in said roll train is substantially in alignment with the longitudinal direction of said film.

58. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, comprising

an endless pattern belt comprising small rolls or plates having a large number of fine hard particles on the surface in parallel, which are longer than the width of the film;

wherein each small roll or plate is arranged slantingly to the moving direction of said film such that it can be in sliding contact with said film; and

wherein said endless pattern belt is rotated in an upstream direction of said film such that said small rolls or plates are continuously in sliding contact with said film, whereby said linear scratches are formed on said film substantially in its width direction.

59. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 58,

wherein said film-pressing means is an endless brush comprising a large number of hairs on an endless belt, which is longer than the width of the film;

wherein said endless brush is arranged in parallel with said endless pattern belt via said film; and wherein said endless brush is rotated such that the direction of said hairs slidably moving on said film is opposite to the direction of said small rolls or plates slidably moving on said film,

whereby said hairs are continuously in sliding contact with said film.

60. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, comprising

at least two rolls each having an axial direction slanting to the moving direction of said film, vertically movable guide means for independently moving said rolls, and a mechanism for controlling said support member,

wherein each roll slidably moves on said film from one end to the other, and is repeatedly subjected to a cycle of moving away from said film after reaching the other end and returning to the original position, during which the movement

of E said roll is controlled such that at least any one of said rolls is always in sliding contact with said film over its entire width,

whereby said linear scratches are formed on said film substantially in its width direction.

61. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 60, wherein each roll is rotated at a lower peripheral speed than the moving speed of said film in an opposite direction to the moving direction of said film.

62. (Withdrawn) The apparatus for producing an easy-to-straight-tear thermoplastic resin film according to claim 65, comprising

at least two roll trains each comprising small rolls having a large number of fine hard particles on the surfaces, which are mounted to supports in parallel;

wherein said roll trains are arranged slantingly to the moving direction of said film; wherein said apparatus comprises vertically movable guide means for independently moving said roll trains in the width direction of said film; and

wherein each roll train slidably moves on said film from one end to the other, and is repeatedly subjected to a cycle of moving away from said film after reaching the other

end and returning to the original position, during which the movement of said roll trains is controlled such that at least any one of said roll trains is always in sliding contact with said film over its entire width,

whereby said linear scratches are formed on said film substantially in its width direction.

63. (Previously Presented) The tearable thermoplastic resin film according to claim 6, wherein said fine pores have an average opening diameter of 0.5 to 100 μm .

64. (Withdrawn) A method for forming substantially parallel linear scratches on a thermoplastic resin film, comprising bringing said film into sliding contact with a roll or plate having a multiplicity of hard fine particles on its surface, and pressing said film onto said roll or plate.

65. (Withdrawn) An apparatus forming substantially parallel linear scratches on a thermoplastic resin film, comprising

(a) a means for moving said film,

(b) a roll or a plate having a multiplicity of fine hard particles on its surface, and

(c) a film-pressing means disposed near said roll or plate, the said film-pressing means being adapted to press

the film onto the roll or plate while the film is brought into sliding contact with said roll or plate.

66. (Currently Amended) The tearable thermoplastic resin film according to claim 1, wherein said film is produced by a method for forming said substantially parallel linear scratches on ~~a~~ said thermoplastic resin film, comprising the steps of:

bringing said film into sliding contact with a roll or plate having a plurality of hard fine particles on the surface thereof, and

pressing said film onto said roll or plate by film-pressing apparatus.

67. (Previously Presented) The tearable thermoplastic resin film according to claim 66, wherein said fine particles have a Mohs' hardness of 5 or more.

68. (Previously Presented) The tearable thermoplastic resin film according to claim 67, wherein said fine particles are fine diamond particles.

69. (Previously Presented) The tearable thermoplastic resin film according to any one of claims 66 to 68, wherein said film-pressing apparatus is an air-blowing device.

70. (Previously Presented) The tearable thermoplastic resin film according to claim 67, wherein the pressure of an airflow blown onto said film by the air-blowing device is 0.05 to 5 kgf/cm².

71. (Previously Presented) The tearable thermoplastic resin film according to claim 68, wherein air is blown from a blower or a nozzle of the air-blowing device.

72. (Previously Presented) The tearable thermoplastic resin film according to any one of claims 66 to 68, wherein said film-pressing apparatus is a brush brought into sliding contact with said film.